

the Atom

Los Alamos Scientific Laboratory

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the Atom

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IN THIS ISSUE

A Unique Study Center and Library Is Dedicated	1
He Came to Study Nuclear Safeguards . . . and returned to Japan	8
Pictures of a Struggle . . . to move a heavy load	9
It Won't Hurt, Will It? . . . expressions galore	11
Plutonium Workers Examined . . . some of the "club" members	12
H-2's New Home . . . some faces and scenes	15
Computer Mapping Becoming a Valuable Tool . . . in energy search	18
A Contaminating Problem . . . and efforts to solve it	22

REGULAR FEATURES

Short Subjects	10	10 Years Ago	24
Photo Shorts	16	Among Our Guests	Inside Back Cover

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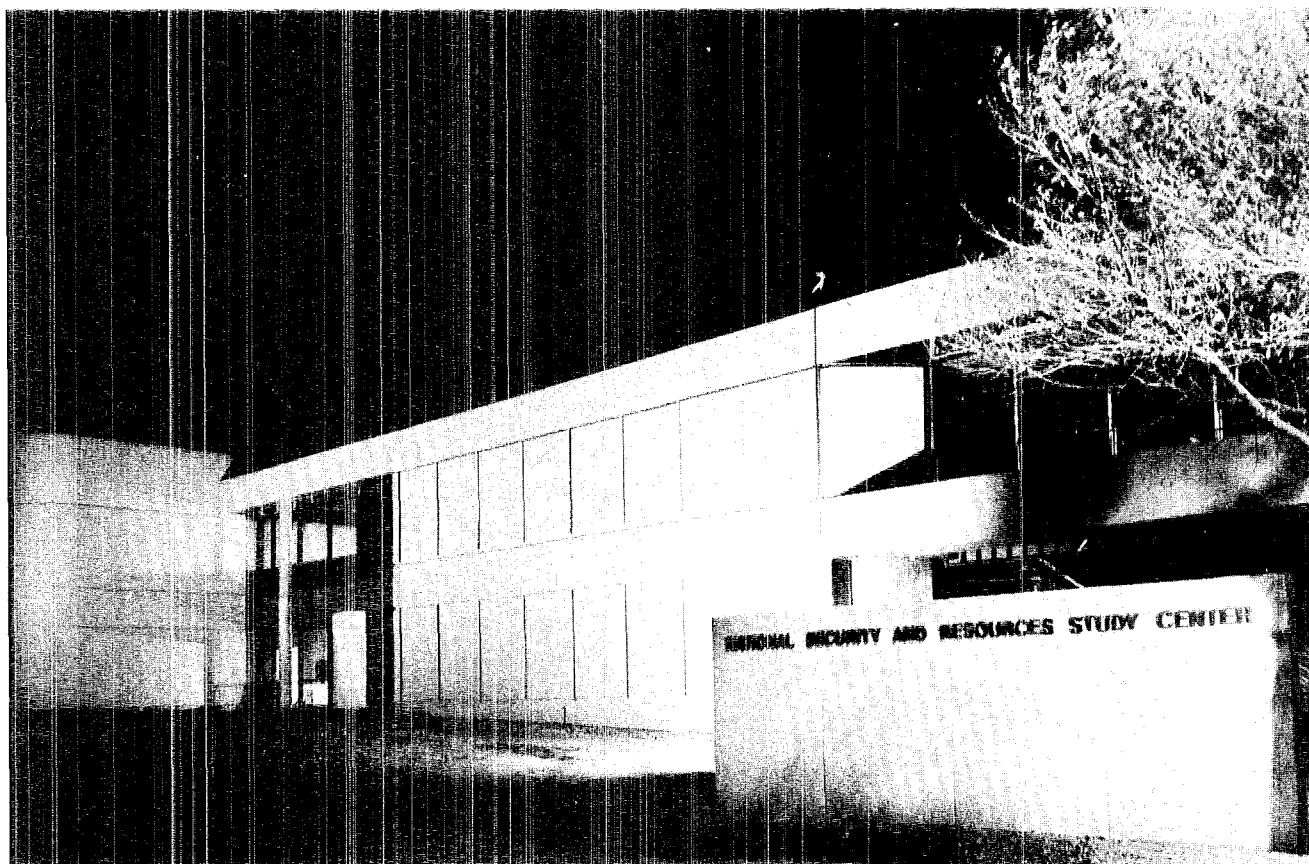
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COVER

Bill Jack Rodgers, ISD-1 photographer, took the picture of the ghost-like figure (H-5 researcher Tom Davis) appearing on the cover. For a better look at what's happening to Davis, turn to page 22. Rodgers caught the aspens in their golden glory for this issue's back cover photo.

*A Unique
Study Center
And Library
Is Dedicated . . .*



... To Advancement of Knowledge

Light snow and bitter cold caused some discomfort to, but didn't diminish the enthusiasm of, spectators and speakers at the dedication on October 28 of the National Security and Resources Study Center at Los Alamos Scientific Laboratory.

About 500 people attended the ceremony, held in front of the not-yet-completed facility, which will have a final price tag of about \$4.6 million. The Energy Research and Development Administration (ERDA) is funding the Center, which will be used by LASL and visiting scientists for the team-systems approach to problem solving and will house the Laboratory's main library.

LASL Director Harold Agnew welcomed special guests and the

audience, and commented on the unique nature and purpose of the Center, scheduled to be completed early in 1977.

Agnew briefly described the efforts made to get approval and funding for the Study Center, and thanked the New Mexico delegation to Congress for their assistance. He also mentioned the help provided by former AEC Chairman James Schlesinger in seeing the Study Center concept materialize.

Lt. Gen. Alfred D. Starbird, USA (Ret.), ERDA Assistant Administrator for National Security, said the Study Center will become a working demonstration of solar energy applications for a moderate size industrial organization.

U.S. Representative Manuel Lu-

jan, Jr., spoke briefly. U.S. Senator Joseph M. Montoya and U.S. Senator Pete V. Domenici, both scheduled to speak at the dedication, were unable to be present because of the bad weather.

After the ceremonies, the main floor of the building was opened for tours.

The 69,000-square-foot structure will provide facilities for classified and unclassified meetings and seminars and for longer studies by visiting scientists. The Center will house the main technical library and its 200,000 bound books and journals, 480,000 technical reports, and copies of more than 2,700 journals.

Sophisticated computing equipment will be available for use by

Hundreds of Los Alamos Scientific Laboratory employees and guests turned their backs to a cold wind as they witnessed the dedication of the National Security and Resources Study Center.



authorized visitors through computer terminals linked to LASI's \$60 million Central Computing Facility.

At present there is no facility in the United States that can provide the scientific study opportunities that will be available in the Study Center. The unclassified library section of the building, which will contain stacks for books, journals, unclassified reports, study and reading areas, catalog and reference collections, and the main circulation area, will be open to the public. The remainder of the building contains office spaces, seminar rooms,



Lt. Gen. Alfred Starbird



Rep. Manuel Lujan, Jr.





LASL Director Harold Agnew, right, takes Herman Roser, left, manager of the Albuquerque Operations Office of ERDA, Lt. Gen. Starbird, Rep. Lujan, and former LASL Director Norris Bradbury on a tour of the Study Center. Bob Bradshaw, ENG-DO, stands between Roser and Starbird.

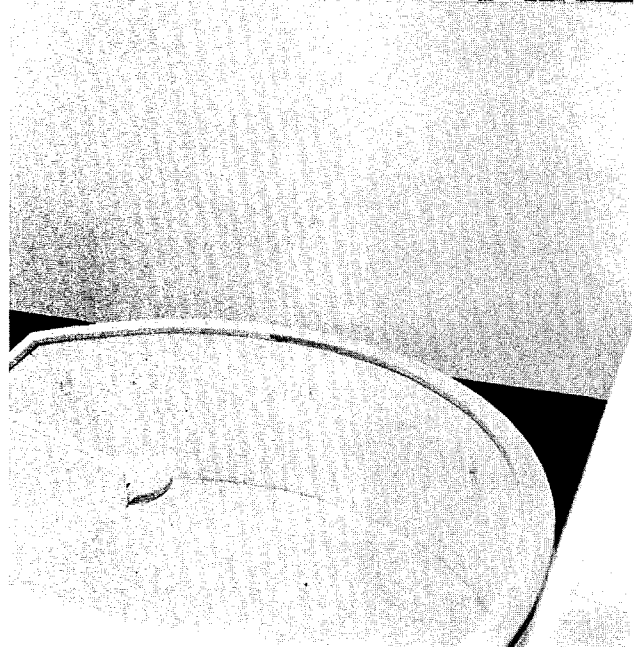
An empty stairwell soon will carry users of the Study Center to various study and work areas.

and the separate classified report library.

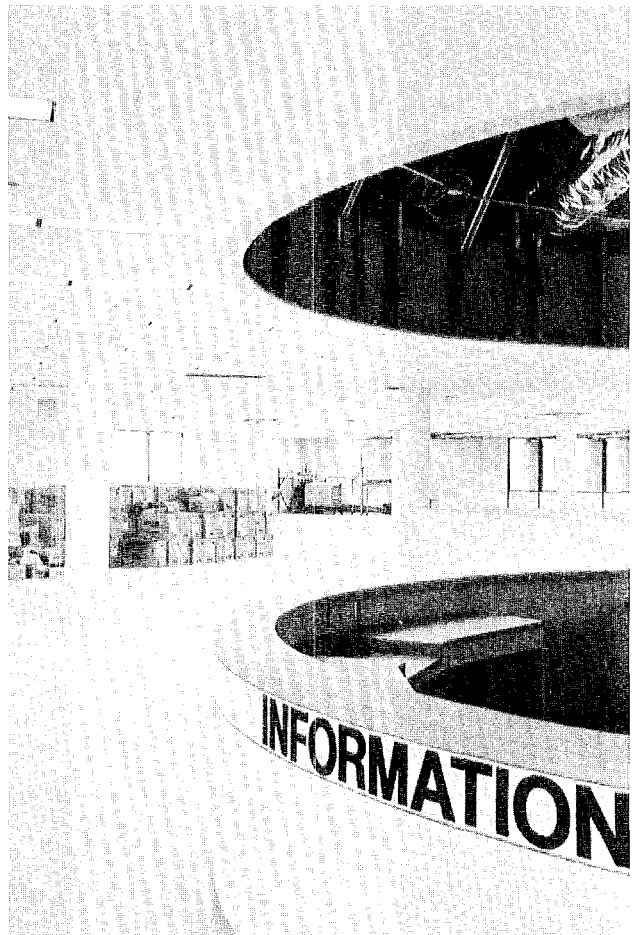
LASL Energy Division scientists designed the solar heating and cooling system, which will provide up to 96 per cent of the Study Center's heating and 76 per cent of its air conditioning. It will be constantly monitored to provide ERDA with valuable background data on solar heating and cooling of large buildings.

The efficiency of the system will be enhanced through insulation, optimized air circulation, and a heat recovery air exhaust system. Also to be tested in use in the building is an advanced Rankine-cycle air conditioning system.

The modernistic structure, with huge flat-plate solar collector panels protruding from the roof, is located adjacent to the LASL Administration Building.



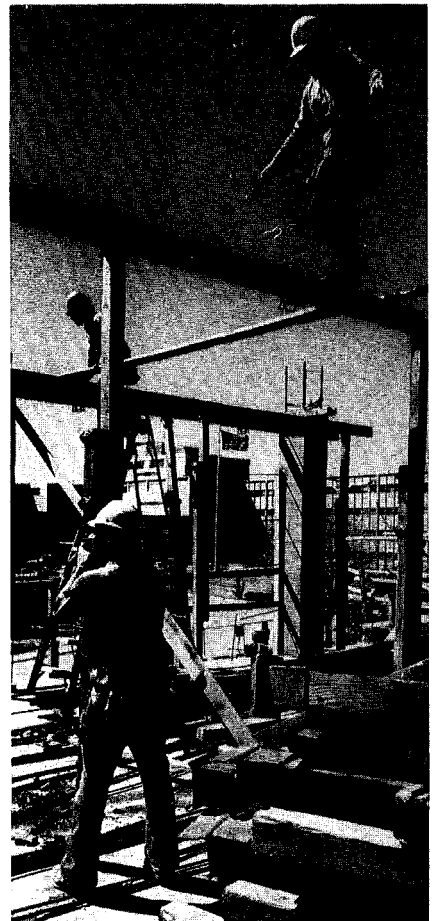
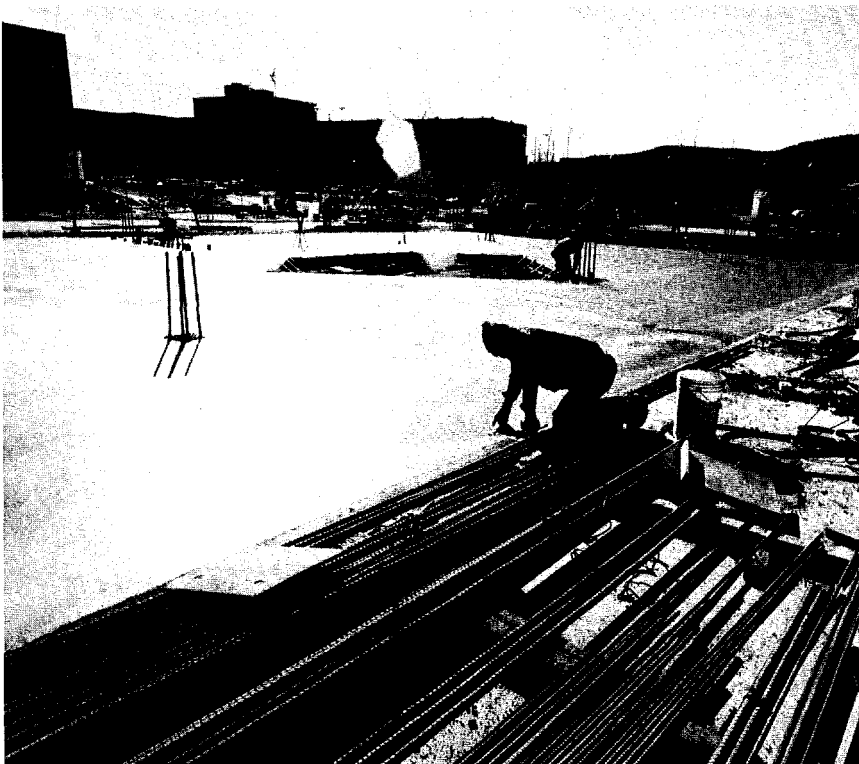
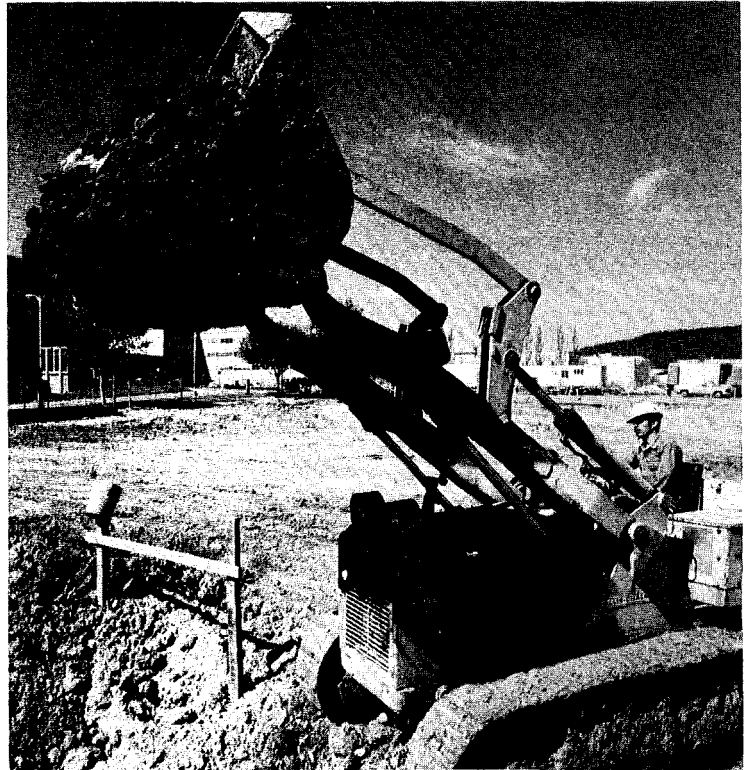
A Study Center visitor's first glimpse of the interior will include the information center in the main floor lobby.

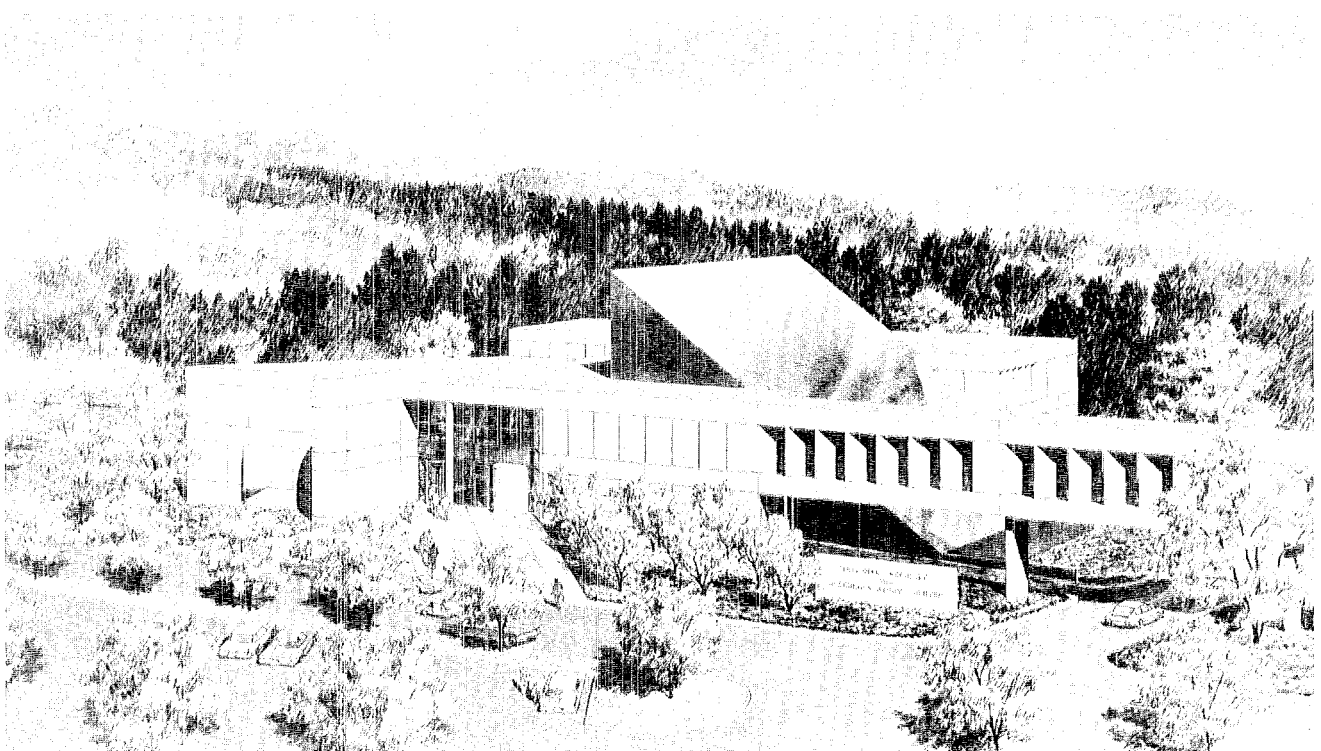
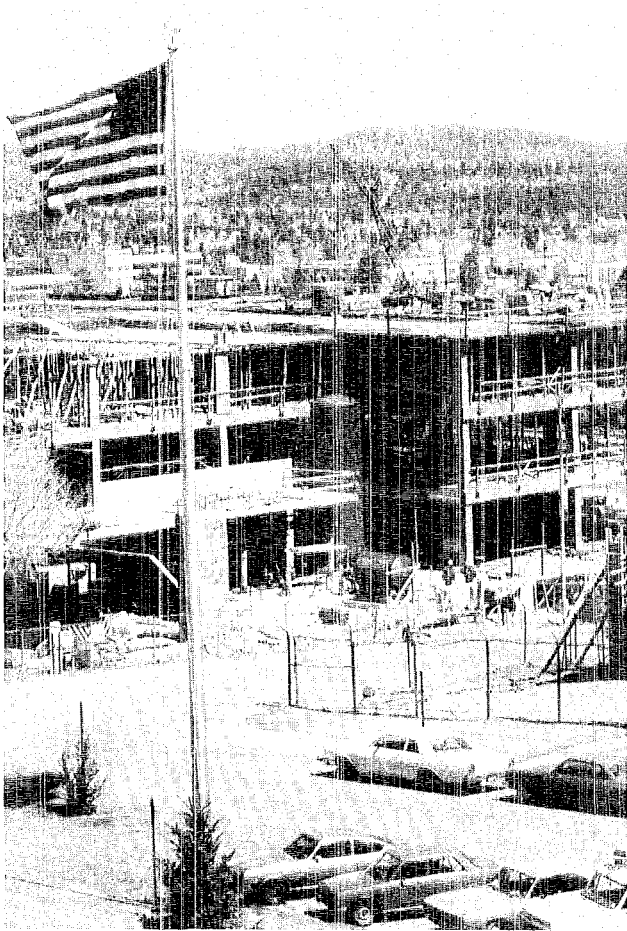


Area news media people and visitors inspect displays set up in the lobby of the Study Center, which is expected to be completed early in 1977.



The NSRSC Moves Toward Completion





He Came To Study Nuclear Safeguards



Tsuyoshi Mishima

Tsuyoshi Mishima came to Los Alamos Scientific Laboratory more than a year ago to study LASL's techniques for nondestructive measurement of plutonium and to exchange information on nuclear materials controls.

The Japanese engineer and his wife, Noriko, and son, Yutaka, and daughter, Misuzu, recently returned to Japan, and Mishima resumed his duties in a plutonium fuel fabrication laboratory of the Power Reactor and Nuclear Fuel Development Corporation (PNC).

"One year is not long enough to learn everything, but I learned much basic information," he said, adding that he hopes to make other, probably brief, trips to the United States to study nuclear materials control.

Mishima said he is one of a small number of scientists and engineers in the PNC, which develops a wide range of nuclear engineering techniques for the Japanese government, who have a background in plutonium measurement and materials control.

One motivation for Mishima's coming to LASL is the Laboratory's dynamic materials control (DYMAC) concept, a system which permits accurate and rapid measurement of nuclear materials at key points throughout a nuclear plant.

Coupled with a plant-wide surveillance system, DYMAC incorporates:

(1) an in-line and at-line measurement system relying heavily on nondestructive analysis (NDA) instruments to provide quantitative assay data at key measurement points;

(2) direct, automated transfer of data from the plant floor into a central computer via terminals at selective measurement stations; and

(3) an automated accountancy system that rapidly gives the status on material balances for smaller segments of a plant.

Mishima was interested in DYMAC to see how it can be applied to the needs of the PNC.

"We have a great deal of knowledge about nuclear fuel fabrication in Japan," he noted, "but my visit here was arranged so I could observe nondestructive assay techniques and the DYMAC concept."

Nondestructive assaying of a nuclear material for plutonium content with a radiation detection instrument allows a sample of the material to be taken and measured without destroying the sample in the process.

Mishima said he and other engineers have been working on designs for a new nuclear fuel fabrication facility for about 2 years, "and some of the information I've re-

ceived on my visit here may be incorporated into techniques for future facilities in Japan."

He said Japan is becoming increasingly conscious of concerns for safety in manufacturing and use of nuclear materials, and said a concept similar to DYMAC is needed and must be adopted for Japan.

Mishima explained that about 15 years ago in Japan there were many nuclear research laboratories, most of them operating independently with their own goals and programs. The government realized that coordination of effort was needed, and the PNC was created with facilities throughout the country.

He said the Japanese have much experience in fuel fabrication and nuclear engineering, but as environmental concerns increase, nuclear safeguards are becoming vital.

The Laboratory's nuclear safeguards research group (R-1) provided Mishima with work space, and assisted him in his research, which also included some work in gamma-ray spectroscopy.

He and his family found time for some recreation and sightseeing, and he stated they "enjoyed the area and are hoping for an opportunity to return."



Pictures of a Struggle



Waterman, Inc. of Albuquerque, specialists in house and building moving and heavy hauling, was hired by LASL to move a 120-ton vessel from one location to another in the S Site area recently. Adding to the task of moving the enormous vessel, used in testing explosives, was the fact that the road over which the load had to be moved was soft dirt, and was built on a grade of up to 14 per cent. In the top photo, a steering tongue is attached to the frame supporting the vessel, and in the second photo a truck and 2 bulldozers manage to move the load . . . a few feet. Then, the weight pulverizes wood used to help support the load, third photo, and progress is stopped. But it is stopped only temporarily, as the next day, the workmen, after rebuilding the frame, are successful in moving the vessel to its destination.



short subjects

Donald J. Keigher, associate group leader for fire protection in H-3, was elected to a 3-year term on the board of directors of the Society of Fire Protection Engineers at the Society's annual meeting recently in Houston.

Irving Bigio, L-2, has been awarded a "Fulbright Senior Lectureship" in optics and laser physics, and will be participating in research programs and lecturing at the Weizmann Institute of Science in Rehovot, Israel, with the Fulbright grant presented to him through the Council for International Exchange of Scholars.

Steven J. Gitomer, T-6, has been appointed associate editor of the Institute of Electrical and Electronics Engineers' (IEEE) Transactions on Plasma Science, and also has been named to the executive committee of IEEE-Nuclear and Plasma Sciences Society standing technical committee on plasma science and applications. Both appointments are for years 1976-1978.

Darleane C. Hoffman, CNC-11 associate group leader, was awarded the John Dustin Clark Medal for meritorious service in the field of chemistry in New Mexico on October 15. Hoffman is credited with the discovery of naturally occurring plutonium-244, and is one of the world's leading investigators of nuclear fission. The award is presented by the Central New Mexico Section of the American Chemical Society.

Charles I. Browne, formerly assistant director for administration at Los Alamos Scientific Laboratory, on October 1 was promoted to associate director for administration. Browne will continue to have overall responsibility for the Laboratory's supporting functions.

Air Force Reserve Colonel **Andrew M. Koonce**, WPC-1, has received the Air Force Commendation Medal for service during periods as a reservist on active duty as a major command mobilization civil engineering staff officer from July 1974 to July 1976 at the Armament Develop-

ment and Test Center (ADTC), Eglin Air Force Base, Florida. As mobilization assistant to the commander ADTC, Koonce aided the commander in decisions involving development, test, and acquisition of armament systems.

Siegfried S. Hecker, CMB-5, has been named recipient of the 1976 Marcus A. Grossmann Young Author Award by the American Society of Metals (ASM). He received the award for a paper entitled "Failure in Thin Sheets Stretched Over Rigid Punches."

Arthur B. Garcia has been named Equal Employment Opportunity officer for Los Alamos Scientific Laboratory. His duties will include assisting LASL employees with EEO-related problems.

Retirements: **William T. Bond**, J-8, field engineer; **James J. Banta**, WX-8, staff member; **Manfred J. Gerardot**, WX-3, unit leader; **George A. Jarvis**, R-5, staff member; **Fermin Martinez**, H-1, decontaminator; **Coleson H. Ruminer**, SD-5, developmental machinist; **Edward F. Will**, SP-3, assistant supervisor; **Hans J. Voss**, MP-7, electronics technician; **John R. Wallis**, SD-5, laboratory machinist; **Eugene M. Cramer**, CMB-5, staff member; **Donald Watts**, SP-4, truck driver; **Hairston G. Worstell**, MP-8, staff member and alternate group leader; **Clarence F. Henderson**, H-DO, property clerk; **Richard L. Henkel**, P-9, staff member; **Donald F. Clinton**, SD-5, branch shop foreman.

John E. Hockett, WX-5, has been elected a Fellow of the American Society for Metals. Hockett, a LASL staff member since 1952, received the recognition for his fundamental studies of the effects of strain rate and temperature on the deformation characteristics of metals.

Norman Riechman, SP-2 alternate group leader, has been elected to a 2-year term as national vice president for administration of the National Property Management Association (NPMA), after completing a 1-year term as national secretary of the NPMA.

Deaths: **Alice M. Luders**, T-9, draftsman; **Petasho Vigil**, CMB-5, x-ray diffraction technician.

It Won't Hurt . . . Will It?



It would be safe to say that most people don't like the idea of getting a shot, with a needle or any other device. The expressions on the faces of these employees, who were vaccinated recently against swine flu, tell the story. Some people exhibit a bit of fear when it is time to get their shot, and some try to joke and say it doesn't hurt. Some try to ignore what is about to happen to their arm, and some probably wonder if it is too late to escape. A lot of people decided the prevention might be better than the temporary discomfort, however, as nearly 6,100 people have received their vaccinations at the Laboratory since the program began the first week in November.



Some of Original "Club"

Plutonium Workers Examined

A dozen members of a small and unique "club" were at Los Alamos Scientific Laboratory in October for medical examinations and reanalysis of their body burdens of plutonium.

They, and 12 other "club" members, are members of an original group of 26 persons exposed to plutonium at the Laboratory in 1944-45. One member of the group has died of a heart attack, and a second died as the result of an automobile-pedestrian accident.

The former handlers of plutonium have, since 1952, had periodic medical examinations to determine what effects, if any, their exposure

to the radioactive material has had on them.

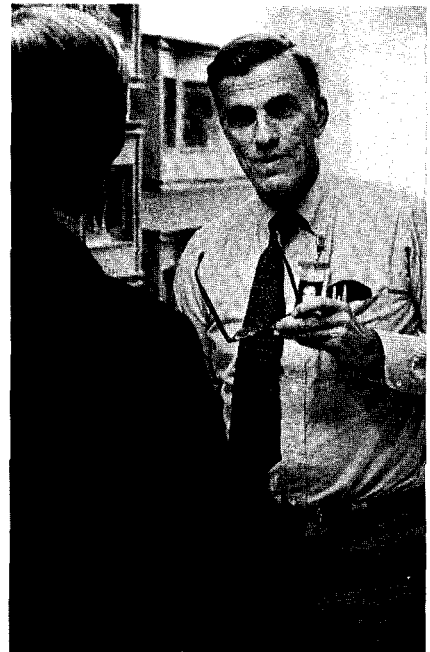
The program of periodic examinations was set up by the late Wright Langham, who was associate division leader for biomedical research at the time of his death in 1972, and Louis Hempelmann, first Health Division leader at LASL and subsequently chairman of the radiology department at the University of Rochester in New York.

In 1971 and 1972, 23 of the original group returned to LASL for their examinations, which had been conducted previously by doctors elsewhere. They have been asked to return to LASL at 5-year intervals

for follow-up tests—thus the recent club "reunion."

The "club" members first received a thorough physical examination at H-2. One blood sample

Ernestine Farrar, H-2, collects a sputum sample from Harry Rodgers.



Louis Hempelmann, one of the organizers of the exams for the former plutonium workers at LASL, talks with Don York, H-DO.

was taken to learn if plutonium in the body had altered the chromosomes. Cough samples of lung secretions are being examined under the microscope to search for possible cellular abnormalities.

Another blood sample was taken and sent to H-5 to determine what level of plutonium is present in the blood 31 years after exposure.

The people also had body x-rays to inspect bones for change; urine and fecal samples were collected for measurements of plutonium excretion.

The 2 major methods of estimating the amount of plutonium in the body are by measuring plutonium in the urine, as already mentioned, and by direct *in vivo* (in the living) measurement of plutonium in the chest. The *in vivo* method was also used on the former handlers of plutonium in October.

For the *in vivo* measurement, the visitors were taken to a lead-shielded room in the basement of the Health Research Laboratory building, where they received body counts. External counting devices were placed over the chest and be-



George Bernstein, dressed in special "pajamas," leaves the lead-shielded room, top photo, after undergoing a body count for plutonium burden. John Umbarger, H-1, operated the counters, and he was assisted by Dru Fuller, H-1. In the photo at left, John Anderson, CMB-11, with back to camera, served as guide on a tour by the former LASL plutonium workers of the new plutonium facility at the Laboratory.



neath the back as they lay supine on a table. Another, mobile counter, was stationed over particular organs of the body. In all, 5 counters were used to count the low-energy photons emitted by plutonium in the body.

The club members are in their 50's and 60's. George Voelz, H-Division head and one of the principal investigators in the study, observes that there are no medical findings so far that appear to relate to their plutonium exposure. He says, "The group is getting older and we find a scattering of the usual diseases that afflict persons their age—heart disease, early arthritis, high blood pressure, overweight, bronchitis in heavy smokers, and other ailments."

Voelz explains that one of the problems in the study of a small group like this is that it is not possible to determine if medical findings are due to natural causes of

the disease, or if it has been influenced by other factors like plutonium exposure, viruses, chemicals, or a host of other things. This requires a larger study where health events in an exposed group of persons can be compared statistically with a similar nonexposed group.

For this reason, the study of plutonium workers is expanding from the study of the original 26, started only a few years after World War II, to a national study of about

15,000 workers in the nuclear industry at 6 ERDA contract laboratories throughout the country.

This much larger study, named Health Study of Workers in the Nuclear Industry and headquartered in the Health Division at LASL, will last several years. Advice and assistance from professionals outside LASL are being used to structure the study and improve the uniformity of data used in the new study.

Don York, H-DO, in charge of data collection for the study, adds, "In this health study, we'll be analyzing information on people who have varying degrees of exposure to plutonium and other radioactive materials and many with no exposure at all. We will undoubtedly be contacting a number of those reading this article as we get further into the study." Principal investigators of the study are Voelz and Hempelmann.

Larger Study Planned

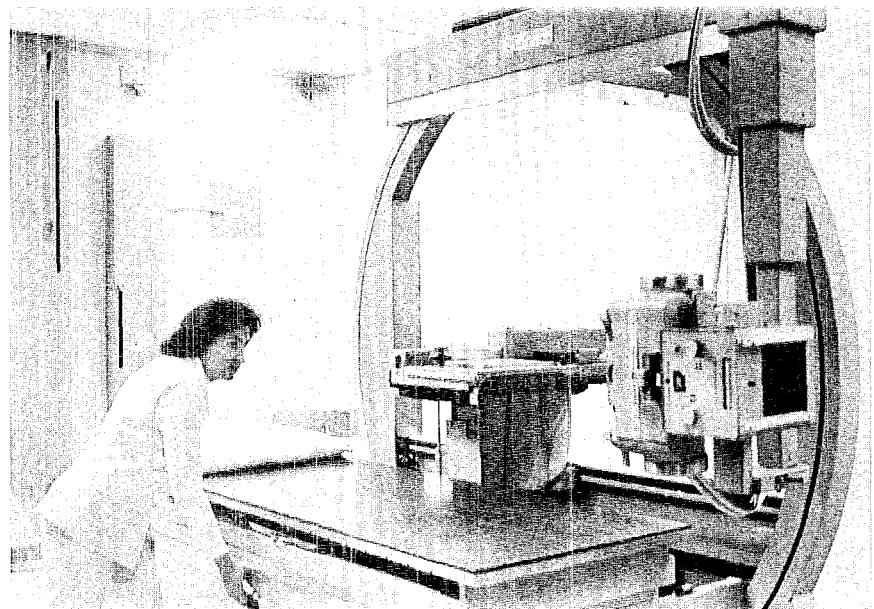
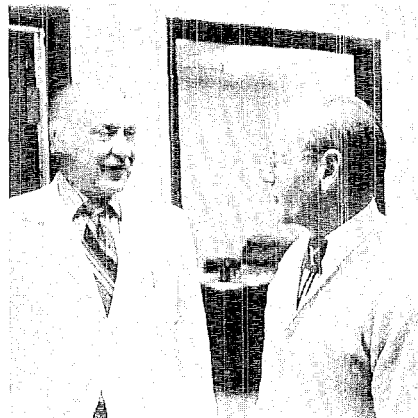
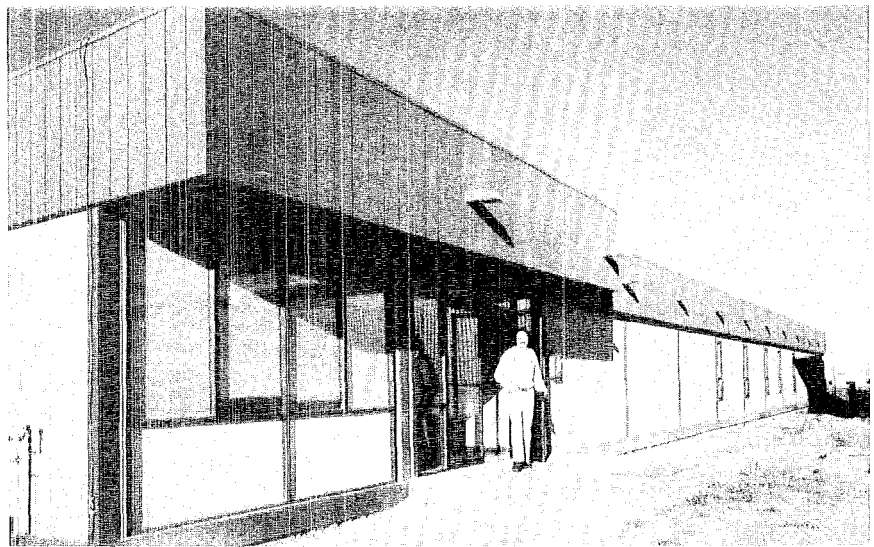
Conferring with former plutonium worker, Harold Long, right, are John Rudnick, left, and Bill Oakes, physicians in H-2.





H-2's New Home

You may not have been to H-2's new Occupational Health Building yet, but your time will come. To help you get oriented, here are a few pictures of scenes and people you may see. In the photo at top, Sara Prestwood, left, and Tita Trujillo schedule examinations. Lola Hodson, left, and Linda Velarde, check patient records in the top right photo. The entrance to the new building, at the corner of Pajarito and Mercury Roads just southwest of the Administration Building, is pictured at right. Josie Gonzales adjusts the x-ray machine, bottom right photo, and below, Sam Ziegler, left and Robert Grier, physicians in H-2, take time for conversation. The old dispensary on the first floor of the Administration Building is closed, and H-2 Group offices and all physicians now are in the new building.





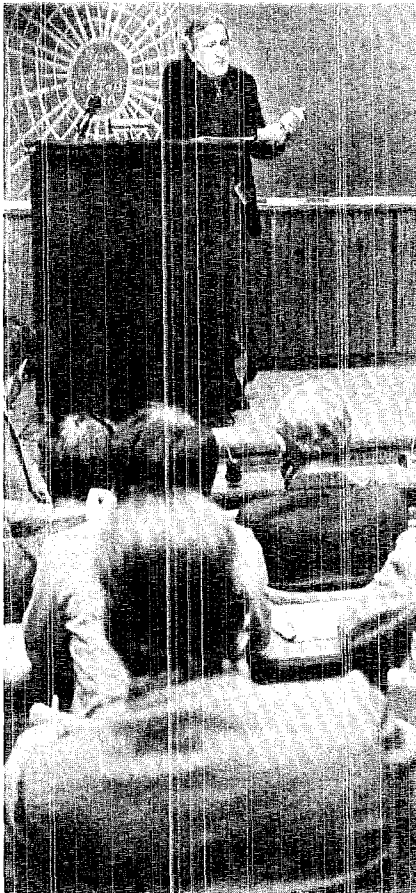
Although there are about 1 million registered nurses in the United States, only 1,300 are Certified Occupational Health Nurses (COHNs), and of the 4 COHNs in New Mexico, 3 are members of H-2, LASL's Occupational Health Group. Esther Bottom, center, who joined the Laboratory in 1953, was the first RN in the state to be certified by the American Board of Occupational Health Nurses, Inc., in 1974. Two other H-2 nurses, Catherine Campbell, right, a LASL employee since 1964, and Ernestine Farrar, supervisor of nurses who came to the Laboratory in 1945, were certified by the ABOHN this year. Prerequisites for certification include graduation from an accredited school of nursing, registration and license as a registered nurse, and a minimum of 5 years experience in the occupational health nursing field.

Three members of the Rio Grande Chapter of the Special Libraries Association in October presented 55 books to the students and teachers of the primary school in Canjilon. The 3, who are ISD-4 employees, are Ann Beyer, middle of the back row, Betty Burnett, president of Rio Grande Chapter, sitting fourth from right, and Connie Sheridan, not in this picture. Helping with the presentation are Canjilon primary teachers Karen Davis, back row left, and Margaret Miera, back row right. Michael Davis, principal, accepts a book from Burnett. The Rio Grande Chapter is composed of librarians in New Mexico and Arizona.

Photo Shorts



Fifty members of a motor home club headquartered in Michigan visited Los Alamos and Santa Fe in October as part of their tour of the Southwest. The 50 motor homes were parked across from the high school in Los Alamos, and the visitors toured several LASL facilities before traveling to Santa Fe to spend the night.



LASL Director Harold Agnew welcomes about 200 people to the 10th annual LAMPF User's Group meeting in the photo at left, and in the photo above, Louis Rosen, front, MP-Division head, and Tom Putnam, left rear, assistant division leader for safety, and, right, James S. Kane, Director of the Division of Physical Research for ERDA, listen to Agnew's comments. Kane later in the morning spoke on "Comments on the Future Role of Basic Research in ERDA."

Composite Computer Mapping:

Becoming A Valuable Tool In Search For Energy Sources

A paradox now exists regarding the supply of natural resources necessary to maintain the present Western life-style and the accelerating exploitation of the environment. Environmental knowledge is the key to resolving this paradox and achieving a proper balance between exploitation and conservation.

Development of flexible environmental guidelines consistent with the legitimate resource needs of American society requires an adequate inventory of environmental

units, followed by description, delineation and evaluation.

These concerns are critical in the energy-rich Rocky Mountain region, which must undergo intense studies. Los Alamos Scientific Laboratory's Q (Energy) Division, through a regional interaction directive from the Energy Research

and Development Administration (ERDA), is involved in energy systems studies in cooperation with government and private enterprise.

The division's group Q-10, responsible for energy systems studies, is charged with accumulating and assessing information about the region's energy reserves. Also assessed

Dick Vogel, seated, Q-10, and A. Keith Turner, Colorado School of Mines, inspect computer-generated composite maps of Bandelier National Monument. The maps are examples of the Generalized Map Analysis System (GMAPS), developed by Turner, being used in several projects by LASL.





Turner and Vogel determine certain components of several maps that will be programmed to produce a composite computer map.

are calculated impacts on the environment, if large-scale harvesting of resources, such as mining, are undertaken.

To turn mountains of facts and figures into an understandable format for review by government policy makers and the public is a major goal for Q-10. A valuable tool in reaching this goal is the Generalized Map Analysis Planning System (GMAPS), a specific computer-assisted geo-information system developed in 1975 at the Colorado School of Mines by A. Keith Turner.

The system came to the attention of LASL scientists Dick Malenfant, Q-10 group leader, and Dick Vogel, Q-10, early in the summer of 1975. It was arranged for Turner to be loaned to LASL on a half-time basis during the fall of 1975 and spring of 1976 to set up the system on the LASL computers.

"This agreement was beneficial in many ways," said Malenfant. "It partially satisfied our directives to interact with regional entities, and it allowed us to work with existing state-supported systems, rather than inventing new, redundant systems."

The GMAPS programs were designed for data compatibility with a pre-existing family of composite mapping programs developed by the U.S. Department of Commerce and widely used by state governments in the Rocky Mountain region. The GMAPS program differs from earlier programs in that it was designed to interact by means of a teletype terminal in a time-sharing environment with a small computer system.

Dick Wylie, C-3, helped Turner redesign GMAPS, a particular program of "composite computer mapping," so it would operate efficiently on one of LASL's computers—Machine O.

"Composite computer mapping" is the name assigned to a recently developed technique to enhance the quality of decision-making inherent in all land-use planning. The name implies a combination of techniques that have been used with varying effectiveness for mapping for quite some time—composite mapping and computer mapping.

Composite mapping is a traditional planning approach that received much prominence in the mid-1960's. The method involves the drawing of maps on transparent overlays on which values are represented by graduated or colored shadings indicating the value of the particular factor within a given geographical area. These "factor" maps may be overlaid on a base map, and

optimum areas can be located visually.

Computer-aided versions of composite mapping represent an important extension of traditional manual graphic procedures. The use of a computer requires some modification to the procedures so that the mapped source data (the data components) can be entered into computer storage. This process is called map digitization.

The map can be digitized readily if the region of interest is subdivided into a large number of small rectangular areas called cells and the dominant condition within each cell is recorded. In this way a graphic representation is converted to a matrix analog.

In composite computer mapping, the graphic overlaying of tonal transparencies is replaced by the algebraic combination of 2 or more matrices whose elements have numerical values corresponding to the gray tone densities.

The GMAPS programs were receiving a wide range of applications, even while they were being implemented at LASL. They were used to study energy developments and environmental impacts in northwestern Colorado, were used by the U.S. Geological Survey to study strip-mine reclamation procedures in Wyoming, were used by the Missouri Geological Survey to study map information statistics, and were used to study engineering, environmental, and socio-economic tradeoffs along a proposed 100-mile-long freeway development in New York and Pennsylvania.

The northwest Colorado energy study is perhaps the most typical of the proposed Q-10 applications, according to Turner.

The northwestern corner of Colorado contains deposits of coal, oil, gas, and oil shale. A number of new coal mines in this region have either recently begun operations or are about to do so, and considerable preliminary work is under way on the oil-shale deposits within the Piceance Basin. The region, which



Dick Wylie, C-3, feeds information for a certain map sector into a teletype terminal connected to LASL's central computers. Through the terminal, changes, deletions, and additions in programming factors can be made to produce a final computer map with desired information. Turner and Vogel assist Wylie in providing the needed information.

is typical of much of the western states' energy development areas, ranks high on the priority list for energy development within the state.

The area is semiarid to arid, and is drained by the upper tributaries of the Colorado River. Water supplies and water rights are important and may serve as a constraint to development of certain types of facilities. The present population is about 120,000, but growth associated with intensive energy development will require considerable expansion of the transportation

network and other public services within the region. How best to anticipate and respond to such future demands depends in part on the directions taken by the development. Thus, the ability to determine probable patterns of development becomes of interest to industry and government alike.

Basically, the analysis strategy involved 2 parallel target area search methodologies—one for oil shale development, and one for coal development.

Each involved 4 topical studies (1) analysis of water availability;

(2) analysis of the resource base, taking into account extraction economics, market economics, and legal restrictions;

(3) analysis of social and environmental concerns, including analysis of competing land uses (specifically agriculture and recreation), visual sensitivity, and sensitivity of vegetation and wildlife to disturbance;

(4) tradeoff analysis among the results of the above 3 topics to produce a final target area model.

These resulting maps were combined, along with a map showing oil and gas resources, according to 4 equations, so that the effects of various energy-development scenarios could be assessed. A sensitivity analysis was then performed, with scenarios ranging from total oil shale development, through various mixtures of oil-shale and coal development, to total coal development.

The analyses conducted so far illustrate how GMAPS composite mapping can be used in evaluating energy development impacts.

Concurrently, work was under way at LASL on refining both the data entry and display functions of GMAPS. Turner and Vogel were aided by Jim McClary, who at the time was with C-3 and now is with TD-DO, in using the FR-80, a device that displays information from the Laboratory's computer system onto photographic color slides. McClary also investigated the use of TV cameras to automatically scan maps and convert them to GMAPS-readable data sets.

"The program is in its infancy," said Vogel. "We've made much progress, however, and in another year we should be ready for whatever demands might be made on us by ERDA for energy systems studies in this region." Already, the LASL version of GMAPS is being used.

In March 1976, the U.S. Park Service contacted LASL about using computerized environmental studies at Bandelier National Monument near Los Alamos. Alan Rice, Q-21, began working with John Hunter, superintendent of Ban-

delier, to use GMAPS in making a comprehensive analysis of Bandelier vegetation, wildlife, archaeological sites, and other specific environmental factors.

In May of this year, Alfred Parker of the economics department and James Gosz of the biology department of the University of New Mexico, contacted LASL for assistance in a study of impacts on wildlife habitats by increased recreational activities in northwestern New Mexico, where an increase in mining and refining activities is predicted.

The study, which is being financed by a grant from the U.S. Department of Interior's Fish and Wildlife Service, is the first part of a proposed environmental impact analysis of the area from the Grand Canyon to the Rio Grande and from Albuquerque to Grand Junction, Colorado. So far, about a dozen maps of northwestern New

Mexico have been entered into the LASL computers.

The Laboratory agreed to process the information on northwestern New Mexico as a demonstration of the capabilities of the GMAPS.

"This environmental study of northwestern New Mexico will serve as an example of what can be done on a larger scale," said Turner, referring to emphasis on regional studies interaction.

Turner is quick to point out that the GMAPS is not a computerized impact model. "It is a tool. The user specifies what variables are important and how they interact. The user is not tied to anyone's ideas or models."

This flexibility helps make GMAPS a valuable aid in production of realistic, applicable studies of energy systems and resources critical to continuance of the American standard of living. ❀

PATENTS

James D. Doss, MP-3, and Charles W. McCabe, E-5, have been awarded a patent for a differential temperature integrating diagnostic method and apparatus. It is a method for detecting the presence of breast cancer in women by using a brassiere with thermally conductive material in each cup to note the difference between the temperature of a normal breast and that of a breast having a malignant tumor.

* *

William A. Ranken and Joseph E. Kemme, both Q-25, have been awarded a patent for a heat pipe methanator. The heat pipe methanator is used for converting coal gas to methane. Gravity return heat pipes are used to remove the heat of reaction from the methanation promoting catalyst, transmitting a portion of this heat to an incoming gas pre-heat section and delivering the remainder to a steam generating heat exchanger.



Bob Pena, ISD-7 photographer, prepares his camera for taking pictures of Tom Davis, H-5, before Davis puts on a suit to protect his clothes against contamination with fluorescent paint dust.

A Contaminating Problem

A researcher in H-5 has been studying methods to lessen the possibility of contamination of skin when a person removes a protective suit which has been worn in an area where radioactive or toxic substances are handled.

"Does the person inside the suit get contaminated particles on his or her clothing when the suit is being removed, and does the worker helping to remove the suit get contaminated? And how can we help lessen the chance of people getting contaminated during removal of such suits?" asks Tom Davis, H-5, who has done much of the research for the Health Division.

Davis has been working on methods to reduce possibility of contamination during suit removal, and he and Frank Berry, ISD-7, proposed taking pictures of a worker before, during, and after wearing a suit sprayed with ultrafluorescent paint dust as part of the experiment. The worker, for this experiment, was Davis.

He put on a polyvinyl chloride suit 6 mils thick, stepped into a chamber and was sprayed with the fluorescent powder. He wore dark, new, not-yet-laundered clothes (laundered clothes contain a detergent residue, said Davis, that is visible under ultraviolet light) under the protective suit, and had pictures taken before putting the suit on, during the spraying, and after removing the contaminated suit.

By taking pictures afterwards, and by using an ultraviolet filter on the strobe light, the photographs showed several areas on the dark clothing where some of the fluorescent paint particles had fallen.

"Care was taken when the protective suit was cut off of me," said Davis, "but, still some of the fluorescent powder landed on my clothes. Prevention of this type of contamination is what we're studying." ❀

Bernie Burnworth, H-5, and Fernandez fasten the hood onto Davis, and he is ready to enter a chamber to be sprayed with ultrafluorescent paint particles.



Davis has slipped into the suit pants, and Joe Bustos and Stella Fernandez, both of H-5, are about to help Davis get into the suit top.





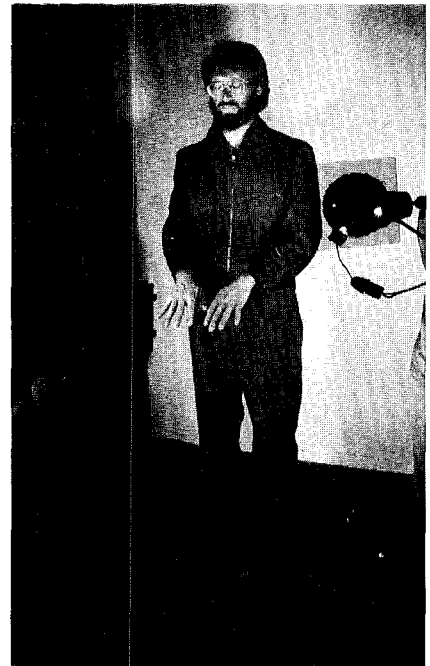
James Griffin, H-5, informs Davis, in the chamber above, about dusting procedures. Below, Bustos sprays Davis with the fluorescent dust, and Griffin and Fernandez make sure the suit is covered entirely.



After the experiment, Davis sheds the suit, made of polyvinyl chloride 6 mils in thickness, as Fernandez, Griffin, and Bustos remove the protective boots from Davis' feet.



In the photo above, Griffin and Fernandez cut the suit off of Davis, and he then has pictures taken to see if the fluorescent dust got onto his clothes during suit removal. Below, Pena takes pictures with the aid of an ultraviolet filter on the strobe unit to locate particles of the dust on Davis' dark clothes.





Kaye D. Lathrop

Lathrop Wins Lawrence Award

Kaye D. Lathrop, R associate division leader, has been named one of the 5 recipients of the E. O. Lawrence Memorial Award for 1976.

Robert Seamans, ERDA Administrator, announced the selection of Lathrop, who was honored for his "outstanding contributions to nuclear reactor theory in the development of techniques and computer codes for solving the neutron transport equation."

Lathrop will receive a gold medal, a citation, and \$5,000.

The award was established by the Atomic Energy Commission in December 1959 to perpetuate the memory of the late Ernest O. Lawrence, inventor of the cyclotron and director of the Radiation Laboratory at Berkeley and Livermore.

Lathrop began work at LASL in 1962, after earning his Ph.D. in nuclear engineering from California Institute of Technology. He was with T-Division from 1962-75. He was alternate group leader of T-1 from 1968-72, group leader of T-1 from 1972-75, and assistant T-Division leader from 1973 until 1975, when he was named associate division leader of R-Division.

10

years ago in los alamos

10 Years Ago In Los Alamos

Culled From the November and December, 1966 Files
of The Atom and the Los Alamos Monitor by Robert Y. Porton

Honor

The Los Alamos Scientific Laboratory shares in a group achievement award presented to the Space Nuclear Propulsion Office at the annual honor awards ceremony held by the National Aeronautics and Space Administration. The award was given "for the high standard of performance established by the people making up the SNPO organization and the resulting superior technical progress of the nuclear rocket program to date."

Toppers Take State

The Los Alamos Hilltoppers ended their finest football season ever Thanksgiving Day, posting their first state championship with a 21-0 victory over Anthony-Gadsden. The Toppers were led by a tremendous effort on the part of fullback Ted Waterman, who picked up 162 yards rushing right through the middle of the big Panther line. Also giving the local eleven a big hand was quarterback Bob Russo, who passed for 95 yards and picked off 4 interceptions.

Medal

Prince Rouse, GMX-2, has been named the 1966 winner of the Bingham Medal, it has been announced by the American Institute of Physics. The award, granted by the Society of Rheology, a member society of AIP, is given annually to a scientist who has made a notable contribution to rheology, the development of the science of the deformation and flow of matter. Prince, a member of AIP and the American Chemical Society, received the award during the Society of Rheology meeting in Atlantic City in early November.

Real Estate Ad

Excellent Barranca Mesa #4 location. Practically new 4 bedroom brick home, 1¾ baths, family room, fully applianced kitchen, fireplace, some carpeting, double garage, stockade fenced yard. Total price, \$27,900. Financing available.

Among Our Guests

General Russell E. Dougherty, Commander in Chief, Strategic Air Command, visited LASL recently for briefings, and talked with Director Harold Agnew.



Rear Admiral Leland S. Kollmorgen, left, discusses LASL weapons activities with John Puckett, ADWP-1. Kollmorgen is assistant director for strategic and support systems test and evaluation in the Office of the Director, Defense Research and Engineering.



Gerry Heam, left, of the United Kingdom's Atomic Weapons Research Establishment, had an orientation visit to LASL recently, and met with Richard Baker, center, CMB Division leader, John Ward, back to camera, CMB-5, and John Mosley, right, WX-5.



Norman Cousins, editor of Saturday Review, was a colloquium speaker at LASL in November.



